22

CLAIMS:

1.   Method of determining write parameters for recording information on a record carrier, said information being in the form of a multi-dimensional channel data stream to be recorded as a channel band of at least two symbol rows one-dimensionally evolving along a first direction and aligned with each other along a second direction,

5   wherein the write parameters for recording a pit-symbol of a symbol unit of said channel data stream, a symbol unit comprising a central symbol and a number of neighbouring symbols of which some are located on the same symbol row as the central symbol and others are located on neighbouring symbol rows, are determined under joint consideration of

(i)   the symbol value of the central symbol of the symbol unit;

10   (ii)   the symbol values of the neighbouring symbols of the symbol unit located in the same symbol row as the central symbol of the symbol unit; and

(iii)   the symbol values of neighbouring symbols of the symbol unit located in the symbol rows that are neighbouring the symbol row of the central symbol of the symbol unit.

15   2.   Method as claimed in claim 1,
wherein said write parameters are determined by use of a parameter table containing the write parameters for all possible classes of symbol units, from which the write parameters for recording a pit-symbol of the symbol unit are selected according to the actual symbol unit.

20   3.   Method as claimed in claim 1,
wherein said write parameters of said symbols are the pit-hole size, the characteristics of write pulses, in particular the number, the duration and/or the power level of write pulses, or the power level of a single write pulse.

25   4.   Method of determining write parameters for recording information on a record carrier, in particular as claimed in claim 1, said information being in the form of a channel data stream to be recorded as a channel band of at least one symbol row one-dimensionally evolving along a first direction, wherein the write parameters are determined by an iterative procedure, said method comprising:

23

- setting the write parameters for recording pit-symbols of said channel data stream to preliminary parameter values,

- updating the preliminary parameter values by searching for the updated parameter values that best fulfil a predetermined criterion for the write parameters for

5   recording of pit-symbols, said criterion being determined by the difference of HF-signal values, which will be determined by use of a channel model or obtained during read-out of pit-symbols recorded by use of the updated parameter values, and reference HF-signal values,

- iterating said updating until a predetermined condition is fulfilled.

10   5.   Method as claimed in claim 4,
wherein said predetermined criterion to be fulfilled for the write parameters is determined by the sum of absolute values of the differences of said HF-signal values and said reference HF-signal values.

15   6.   Method as claimed in claim 4,
wherein said predetermined criterion to be fulfilled for the write parameters is determined by the sum of squared differences of said HF-signal values and said reference HF-signal values.

7.   Method as claimed in claim 5 or 6,
20   wherein said sum comprises squared differences for all pit-symbols in a particular symbol area and wherein said sum shall be minimized during updating.

8.   Method as claimed in claim 4,
wherein said predetermined condition is that the write-parameter for each pit-symbol has
25   been updated for a predetermined number of times.

9.   Method as claimed in claim 4,
wherein said predetermined condition, being a quality measure or figure-of-merit, is that is has reached a value below a predetermined threshold value.

30
10.   Method as claimed in claim 4,
wherein said reference HF-signal values are obtained from a linear channel impulse response.

11.   Method as claimed in claim 4,

24

wherein said HF-signal values and said reference HF-signal values are determined on the basis of said symbol units, each symbol unit comprising a number of nearest neighbouring symbols surrounding the central symbol.

5   12.   Method as claimed in claim 11,
wherein said preliminary parameter values are derived from a parameter table containing the write parameters for all possible classes of symbol units.

13.   Method as claimed in claim 11,
10   wherein in said updating step of the iteration the write parameters of the pit-symbols to be updated are updated subsequently symbol column by symbol column for a number of symbol columns defining a detection window, wherein the detection window is shifted after each iteration by at least one column in the tangential direction or said first direction of said channel band, whereby the write parameters of symbols in a new column that enters the
15   detection window are set to initial predetermined values, and wherein the iterations are repeated for a given column until said column is shifted outside of said detection window.

14.   Device for determining write parameters for recording information on a record carrier, said information being in the form of a multi-dimensional channel data stream to be
20   recorded as a channel band of at least two symbol rows one-dimensionally evolving along a first direction and aligned with each other along a second direction,
wherein the write parameters for recording a pit-symbol of a symbol unit of said channel data stream, a symbol unit comprising a central symbol and a number of neighbouring symbols of which some are located on the same symbol row as the central symbol and others are located
25   on neighbouring symbol rows, are determined under joint consideration of
(i)   the symbol value of the central symbol of the symbol unit;
(ii)   the symbol values of the neighbouring symbols of the symbol unit located in the same symbol row as the central symbol of the symbol unit; and
(iii)   the symbol values of neighbouring symbols of the symbol unit located in the
30   symbol rows that are neighbouring the symbol row of the central symbol of the symbol unit.

15.   Device for determining write parameters for recording information on a record carrier, in particular as claimed in claim 14, said information being in the form of a channel data stream to be recorded as a channel band of at least one symbol row one-dimensionally

25

evolving along a first direction, wherein the write parameters are determined by an iterative procedure, said device comprising:

- a setting means for setting the write parameters for recording pit-symbols of said channel data stream to preliminary parameter values,

5 - an updating means for updating the preliminary parameter values by searching for the updated parameter values that best fulfil a predetermined criterion for the write parameters for recording of pit-symbols, said criterion being determined by the difference of HF-signal values, which will be determined by use of a channel model or obtained during read-out of pit-symbols recorded by use of the updated parameter values, and reference HF-

10 signal values,

- an iteration means for iterating said updating until a predetermined condition is fulfilled.

16.   Recording method for recording information in the form of a channel data

15 stream on a record carrier, said information being recorded as a channel strip of at least one symbol row one-dimensionally evolving along a first direction, wherein pit-symbols are recorded by use of write parameters which are determined by a method as claimed in claim 1 or 4.

20 17.   Recording apparatus for recording information in the form of a channel data stream on a record carrier, said information being recorded as a channel strip of at least one symbol row one-dimensionally evolving along a first direction, said recording apparatus comprising

means for recording pit-symbols by use of write parameters and

25 a device for determining write parameters for recording information on an optical record carrier as claimed in claim 14 or 15.

18.   Computer program comprising program code means for causing a computer to perform the steps of the methods as claimed in claim 1 or 4 when said computer program is

30 executed on a computer.

19.   Record carrier on which pit-symbols have been recorded by use of the method as claimed in claim 16, the information being recorded in the form of a channel data stream

26

as a channel band of at least one symbol row one-dimensionally evolving along a first direction.